

In response to the Office Action of September 10, 2002, please amend the above-identified application as follows:

IN THE CLAIMS

Please cancel Claim 17.

Please amend Claims 1-9, 12, 14 and 18, and add new Claims 19 and 20, to read as set forth below, wherein all of the pending claims are presented. A version of the amended claims, marked to show the changes, is appended.

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301  
1. ~~(Twice Amended) A data processing method for processing data in~~  
an image printing apparatus subjected to time-division drive of a printhead, said apparatus having an editing buffer and a print buffer, comprising the steps of:

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rearranging one word of data corresponding to a plurality of  
contiguous print elements provided on the printhead, that is stored divisionally in two or  
more address regions in the editing buffer, and storing the data in one address region in the  
print buffer.

2. (Twice Amended) An image printing apparatus subjected to  
time-division drive of a printhead, comprising an editing buffer and a print buffer, wherein  
one word of data corresponding to a plurality of contiguous print elements provided on the

~~printhead, that is stored divisionally in two or more address regions within the editing~~  
buffer, is rearranged in one address region within the print buffer.

3. (Twice Amended) The apparatus according to claim 2, further comprising:

delay means for delaying a set of data that corresponds to contiguous print elements, a number of which is a whole-number multiple of a number of time divisions employed in time-division drive, said delayed data being from the data that has been read out of said editing buffer.

4. (Amended) The apparatus according to Claim 3, wherein storage means for a horizontal-to-vertical conversion is used as said print buffer.

5. (Twice Amended) An image printing apparatus subjected to time-division drive in which  $n$  represents the number of time divisions and one word is composed of  $m$  bits, comprising:

data processing means for reading  $n$ -bit data corresponding to  $n$  contiguous nozzles serves as one unit from an editing buffer and storing contiguous 1-bit data, where the lowest common multiple of  $n$  and  $m$  is 1, in one address within a print buffer.

6. (Twice Amended) An image printing apparatus for processing data in which one word consists of eight bits, comprising:

printhead driving means for discharging ink from four contiguous nozzles of a printhead at different timings;

an editing buffer;

GC1  
means; and

data transfer means for reading data from said editing buffer and transferring data to said print buffer;

B1  
said data transfer means rearranging sets of 4-bit data, each set of which corresponds to four contiguous nozzles of the printhead, in such a manner that two sets of data are stored in one address within said print buffer as 8-bit data.

7. (Twice Amended) An image printing apparatus subjected to time-division drive, comprising:

an editing buffer and a print buffer for storing image data;

a printhead for performing printing based upon the image data read out of said print buffer; and

means for reading image data from two or more address regions within said editing buffer, which will be printed by driving said printhead one time, and packing the image data in numbers of bits serving as units in which data is read from and

~~written to said editing buffer to store the packed image data in one address region within~~  
said print buffer, before the image data is transmitted to said printhead.

8. (Twice Amended) A method of controlling an image printing apparatus subjected to time-division drive and having an editing buffer and a print buffer for storing image data and a printhead for performing printing based upon the image data read out of said print buffer, said method comprising a steps of:

reading image data from two or more address regions within said editing buffer, which will be printed by driving said printhead one time; and,

packing the image data in numbers of bits serving as units in which data is read from and written to said editing buffer to store the packed image data in one address region within said print buffer, before the image data is transmitted to said printhead.

9. (Twice Amended) A computer-readable memory storing a control program for controlling an image printing apparatus subjected to time-division drive and having an editing buffer and a print buffer for storing image data and a printhead for performing printing based upon the image data read out of said print buffer, said control program being a program for:

reading image data from two or more address regions within said editing buffer, which will be printed by driving said printhead one time; and,

B1  
C-2  
~~packing the image data in numbers of bits serving as units in which~~  
data is read from and written to said editing buffer to store the packed image data in one address region within said print buffer before the image data is transmitted to said printhead.

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10. The method according to claim 1, wherein the print element comprises a nozzle to discharge ink.

11. The method according to claim 2, wherein the print element comprises a nozzle to discharge ink.

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B2  
C1  
~~12. (Twice Amended) A data processing method for processing data in~~  
an image printing apparatus which performs printing by causing a printhead to scan, said printhead having a plurality of print elements arrayed at predetermined angles with respect to the scanning direction of the printhead and subjected to time-division drive, comprising a step of:

rearranging one word of data corresponding to a plurality of contiguous print elements provided on the printhead, that is stored in two or more address regions in an editing buffer, to store the data in one address region in a print buffer.

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13. The method according to claim 12, wherein the print element comprises a nozzle to discharge ink.

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B3  
sh  
cc, /

~~14. (Twice Amended) A data processing apparatus for processing data in an image printing apparatus which performs printing by causing a printhead to scan, said printhead having a plurality of print elements arrayed at predetermined angles with respect to the scanning direction of the printhead and subjected to time-division drive, wherein one word of data corresponding to a plurality of contiguous print elements provided on the printhead, that is stored divisionally in two or more address regions within an editing buffer, is rearranged in one address region within a print buffer.~~

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15. The apparatus according to claim 14, comprising:  
first storage means for storing data of a plurality of words; and  
delay means for delaying an amount of data that corresponds to a whole-number multiple of a number of time divisions employed in time-division drive, said delayed data being from the data that has been read out of said first storage means.

16. The method according to claim 14, wherein the print element comprises a nozzle to discharge ink.

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B4  
sh  
cc, /

~~18. (Twice Amended) The apparatus according to claim 2, comprising:~~

B4  
C1  
a first register for storing a whole-number multiple of one word of data which is read from two or more address regions within the editing buffer; and,  
a second register for storing a set of data that corresponds to contiguous print elements, a number of which is a whole-number multiple of a number of time divisions employed in time-division drive.

B5  
C1  
19. (New) ~~The apparatus according to claim 2, wherein said editing~~  
buffer and said print buffer are allocated in different areas within a memory respectively.

20. (New) A data processing method for processing data in an image printing apparatus subjected to time-division drive of a printhead and having a first storage means and a second storage means, comprising:

a horizontal-to-vertical conversion step of storing data in the first storage means in the horizontal direction and reading data from two or more address regions in the first storage means in the vertical direction;

a rearranging step of rearranging one word of data corresponding to a plurality of contiguous print elements provided on the printhead, which is included in data read from the first storage means in said horizontal-to-vertical conversion step, to store the one word of data in one address region within the second storage means; and,